Effect of Local (intranasal) versus Systemic Steroids in Treatment of Children with Otitis Media with Effusion

Thesis

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List of Abbreviations

Abb.	Full term

AAFP .....American Academy of Family Physicians

AAO-HNS .....American Academy of Otolaryngology – Head and Neck Surgery

AAP .....American Academy of Pediatrics

AH .....Adenoidal Hypertrophy

AOM .....Acute Otitis Media

ET .....Eustachian Tubes

OME .....Otitis Media with Effusion

SNHL .....Sensori-Neural Hearing Loss

URTI .....Upper Respiratory Tract Infection

ABSTRACT

Background: otitis media with effusion (OME) or glue ear is the collection of fluid behind the tympanic membrane without inflammatory signs present for 6 weeks.

Aim of the Work: comparing the effect of intra nasal versus systemic steroids in treatment of children with Otitis media with effusion as regard: Improvement of clinical symptoms and Audiological findings.

Subjects and Methods: this study is a prospective, case control study on the effects of intranasal versus systemic steroids on children with otitis media with effusion. This thesis study was conducted on 30 patients diagnosed according to clinical and audiological assessment recruited from otorhinolaryngology outpatient clinic Ain Shams university hospital from October 2017 to July 2018. An informed consent was obtained from each patient or control or their legal guardians before enrolment in the study.

Results: however, statistically there is no significant relation between the occurrence of complete resolution of OME and the route of administration of steroid (either intranasal or systemic), whatever the cause either allergic rhinitis or adenoid hypertrophy. So we can use either intranasal or systemic steroids in management of otitis media with effusion in children with either allergic rhinitis or adenoid hypertrophy or both.

Conclusion: both topical intranasal and oral steroids are effective adjunctive treatment for OME in children in the short term, without significant difference between the two methods, and thus oral steroid complications could be avoided using local steroid spray.

Keywords: *Otitis Media with Effusion - Systemic Steroids – Intranasal*

INTRODUCTION

Otitis media with effusion (OME) or glue ear is the collection of fluid behind the tympanic membrane without inflammatory signs present for 6 weeks ***(Berkman et al., 2013).***

By the age of 4 years, ~80% of children will have had an episode of OME, most of which resolve and only 10% of episodes last for a year or more ***(Williamson et al., 2009).***

The natural history of otitis media is very favorable. Combined estimates of spontaneous resolution provide a benchmark, against which new or established interventions can be evaluated. The need for surgery in children with recurrent acute otitis media (AOM) or chronic OME should be balanced against the likelihood of timely spontaneous resolution and the potential risk for learning, language, or other adverse sequelae from persistent middle ear effusion ***(Rosenfeld et al., 2016).***

OME is the most common cause of hearing impairment (and the most common reason for elective surgery) in children, where it usually follows an episode of acute otitis media (AOM). It is uncommon in adults, in whom Eustachian tube dysfunction is the predominant cause and suspicious aetiologies should be considered ***(Atkinson et al., 2015).***

OME is the leading cause of hearing loss in children. Prolonged or fluctuating hearing impairment in early childhood may result in long-term consequences for delayed speech & language development ***(Gates et al., 2008).***

Adenoidal hypertrophy (AH) and OME are the most frequent indications for surgery in children. The current treatment options for OME include the following: elimination of the risk factors, follow-up without treatment, use of antibiotic and/or decongestant medication, maneuvers to open the Eustachian tubes, such as with nasal balloons, prophylactic antibiotic use, and, if medical treatment fails, tympanostomy tube placement with or without adenoidectomy ***(Rosenfeld et al., 2016).***

A potential role of corticosteroids in the treatment of OME has emerged. The short-term use of systemic steroids provides a temporary improvement, but long-term use of systemic steroids is not appropriate in children due to severe side effects. In contrast, topical nasal steroids without systemic side effects might be used ***(Cengel et al., 2006).***

AIM OF THE WORK

Comparing the short term effect of intranasal versus systemic steroids in treatment of children with Otitis media with effusion due to adenoid hypertrophy or allergic rhinitis or both as regard:

- Improvement of clinical symptoms.
- Audiological findings.

Chapter 1
ANATOMY OF MIDDLE EAR CLEFT

The middle ear space extends from the medial aspect of the tympanic membrane, laterally, the cochlea, medially, the tegmen, superiorly, jugular bulb, inferiorly, and the root of the styloid process, posteriorly. It is contiguous with the Eustachian tube, anteriorly, and with the mastoid cavity, posteriorly, via the aditus ad antrum. It is lined with mucosal epithelium ***(Valentine, 2008).***

Contents of tympanic cavity:

The tympanic cavity contains the ossicles (malleus, incus and stapes) two muscles (stapedius and tensor tympani) and two nerves (chorda tympani and tympanic plexus) ***(Scott-Brown's Otolaryngology, 7th ed, 2008).***

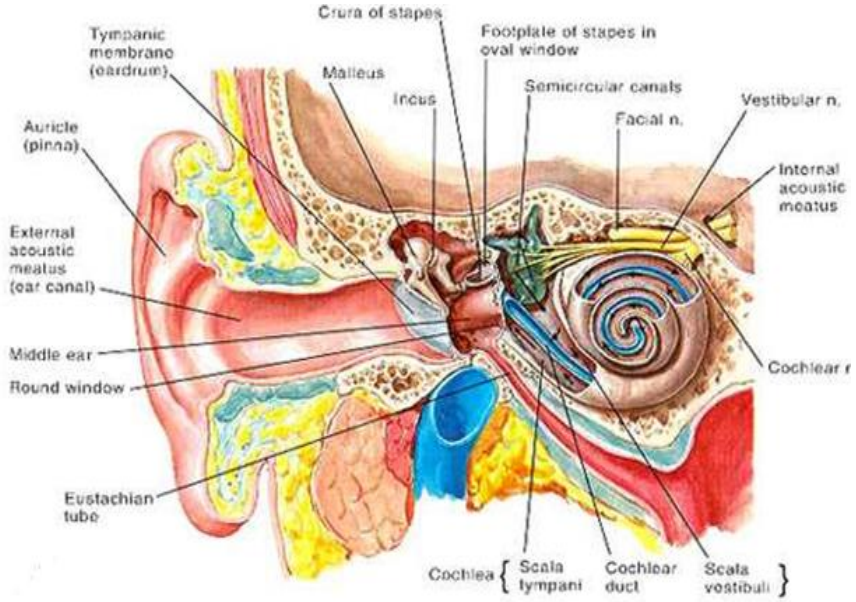

Fig. (1): Anatomy of Ear including ME cavity.

Anatomy of the Eustachian tube:

The Eustachian tube is named after the Italian anatomist, Bartolomeo Eustachi, who observed that it was a canal that connected the nasopharynx to the middle ear. The Eustachian tube is also known as the pharyngotympanic tube or the auditory tube ***(Jufas et al., 2018).***

The Eustachian tube is located in the skull base and connects the middle ear cleft to the nasopharynx. The tube has an osseous component, located in the temporal bone, and a cartilaginous component, located in the nasopharynx. The ratio of the osseous to cartilaginous components of the Eustachian tube varies with age ***(Bluestone, 2003).***

The Eustachian tube length in infants is approximately 17.5 mm, which then continue to grow to a length about 37.5 mm when reaching adulthood. The angle of the tube in infants and children is about 10 degrees from the eye-ear (Frankfort) Horizontal plane. This differs in adults, where the angle is approximately 45 degrees. This difference is considered to be one of the factors that increase the risk for developing Eustachian tube dysfunction in infants and children ***(Kristin Hayes, 2018).***

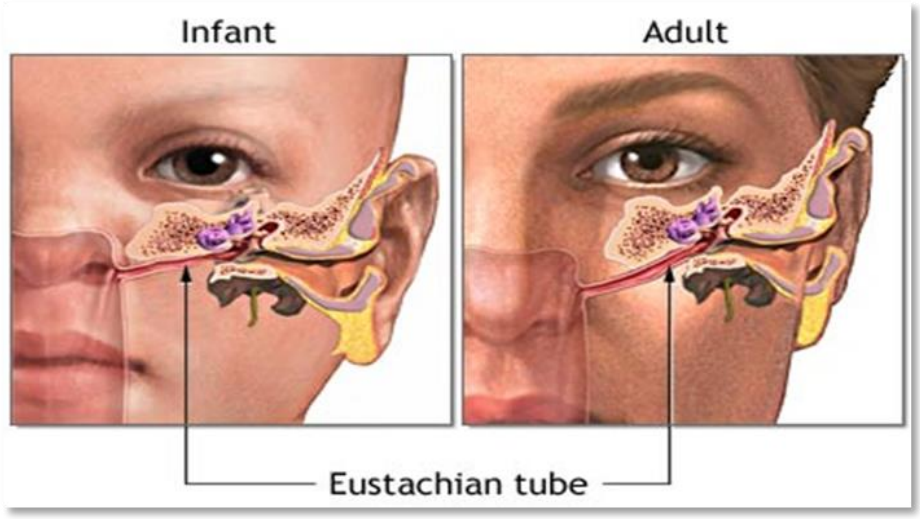

Fig. (2): Eustachian tube position in infants and adults ***(Gan et al., 2008).***

The torus tubarius is a projection along the lateral wall of the nasopharynx which serves as the orifice of the Eustachian tube. It is composed of cartilage with overlying soft tissue. Adenoid tissue, which is lymphoid tissue, is found just posterior and medial to the Eustachian tube. The pharyngeal

recess, otherwise known as the fossa of Rosenmuller, lies directly posterior and superior to the torus tubarius ***(Lim, 2000).***

Four muscles are in close association with the Eustachian tube, assisting in its function. These muscles are Tensor veli palatini, Levator veli palatini, Tensor tympani and Salpingopharyngeus. The tensor veli palatini is a thin muscle that serves as the only dilator of the Eustachian tube ***(Takasaki et al., 2007).***